**PROPOSED AMENDMENTS TO H.A.R. CHAPTER 11-54, WATER QUALITY STANDARDS**
**- RATIONALE -**
**Department of Health, Environmental Planning Office**
**September 30, 2003**

The four categories of proposed amendments described below represent a short list of chapter amendments designed to conform Hawaii's rule to federal requirements without further delay, as requested by the U.S. Environmental Protection Agency in a letter to the Department of Health dated January 31, 2003. Please note that these proposed amendments have been selected from a larger set that were previously reviewed and commented on by a departmental Water Quality Standards Technical Advisory Committee during 2000 – 2002. Additional changes were made in response to the Small Business Advisory Board's comments in 2003.

## I. Proposed Amendments to §11-54-1, Definitions.

1. Existing uses: This term is defined to clarify its use in the proposed amendment to §11-54-1.1 General policy of water quality antidegradation, which conforms section 1.1 to the federal antidegradation regulation at 40 C.F.R. 131.12.

2. State waters: The U.S. Environmental Protection Agency (EPA) has asked the State Department of Health to amend its §11-54-1, Definitions, to make the definition of state waters consistent with the definition of waters of the U.S., as defined in 40 C.F.R.122.2 and with the definition of State waters in the Hawaii Revised Statutes, Chapter 342D, Water Pollution.

   Definition in Chapter 342D, HRS:

   > State waters means all waters, fresh, brackish or salt around and within the State, including, but not limited to, coastal waters, streams, rivers, drainage ditches, ponds, reservoirs, canals, ground waters, and lakes; provided that drainage ditches, ponds, and reservoirs required as part of a water pollution control system are excluded. (1999, HRS, Cumulative Supplement, Volume 6)

   Definition in H.A.R. 11-54-1 (current edition, April 17, 2000):

   > "State waters", as defined by section 342D-1, HRS, "means all waters, fresh, brackish or salt around and within the State, including, but not limited to, coastal waters, streams, rivers, drainage ditches, ponds, reservoirs, canals, ground waters, and lakes; provided that drainage ditches, ponds, and reservoirs required as part of a water pollution control system are excluded." This chapter applies to all State waters, including wetlands, and excluding the following: groundwater; and ditches, flumes, ponds and reservoirs required for water pollution control *or used solely for irrigation, so long as they do not discharge into any other State waters* (italics added for emphasis). The state of Hawaii has those boundaries stated in Hawaii Constitution, art. XV, §1.

   The Department understands that EPA views the "solely for irrigation" exclusion as inconsistent with the required scope of covered waters under the NPDES program for the following reasons:

(a) There is no corresponding categorical exclusion in the federal definition of "waters of the United States" in 40 C.F.R. § 122.2;
(b) Some people have tried to impound and isolate for irrigation waters that previously were clearly "waters of the United States" and erroneously claim that the waters were no longer covered; and
(c) There may be cases where isolated waters still have sufficient commerce connection to qualify as "waters of the United States."

EPA has to date only written to the Department that the exclusion is not consistent with the definition of "waters of the United States" in 40 C.F.R. §122.2.

Consequently, a blanket exclusion of irrigation storage and conveyance systems from the definition of State waters in H.A.R. §11-54-1 is inconsistent with federal and State law and restricts the ability of the State to manage water quality in situations where overflows from irrigation systems into State waters cause chronic water pollution problems. In order to achieve consistency among definitions, text emphasized in italics, above, is modified in the proposed amendment to show that the exclusion does not apply to waters of the United States as defined at 40 C.F.R. 122.2. Revising the definition in this manner excludes irrigation systems not discharging into statutorily defined "waters of the U.S.," and includes national waters subject to federal NPDES requirements.

Water in those irrigation and storage systems that qualify as "State waters" would be subject to only the criteria described in §11-54-4 [see H.A.R. 11-54-5.2(a) on inland water criteria; also, as a general implementation policy the basic (free from) criteria in §11-54-4(a) apply to water body types, such as irrigation and storage system components, for which numerical water quality criteria have not been established].

**II. Proposed Amendments to §11-54-1.1 <u>General policy of water quality antidegradation.</u>**

The EPA has asked the department to propose amendments to its antidegradation policy, which currently incorporates only part of paragraph (a)(2) of the federal regulation at 40 C.F.R. §131.12, to make the policy explicitly consistent with the federal regulation. The Water Quality Standards Advisory Committee asked that the State's rule be identical to the federal regulation.

Consequently, the proposed amendments follow the federal text word-for-word, differing at only two points:

- Paragraph (a) – the word "instream" has been removed from the proposed amendment because the antidegradation requirement applies to all existing uses of surface waters in and bordering the State, whether these waters are fresh, brackish or marine.
- Paragraph (b) – the word "State" has been changed to "director," meaning the Director of the Department of Health.

The Department's Clean Water Branch implements the antidegradation policy for both point source discharges and polluted runoff. For point sources, files containing permit conditions and

application forms may be downloaded from www.state.hi.us/doh/eh/cwb/. Although these documents do not explicitly list antidegradation requirements, the policy is implemented through requirements that individual NPDES permit applicants either demonstrate that their discharges meet all applicable water quality standards, or apply for a Zone of Mixing (ZOM) permit condition for those pollutants proposed for discharge in concentrations exceeding the standards. If requested by the Clean Water Branch, an antidegradation analysis must be attached to an NPDES permit application. The Branch issues ZOMs with the required NPDES permits.

An applicant for a Zone of Mixing must justify the size of the ZOM, and demonstrate that the "Best Degree of Treatment or Control" has been incorporated into the process design. NPDES general permits and stormwater permits rely on Best Management Practices (BMPs) for pollution control; permit holders are required to install and operate BMPs to prevent buildup of large pollutant loads in surface runoff. Clean Water Act 401 Water Quality Certifications for short-term construction projects incorporate both BMP and WQS requirements.

Antidegradation policy for polluted runoff is implemented through voluntary application of guidelines and BMPs for control of pollutants in runoff in each of six land use areas - agriculture, forestry, urban, marinas and recreational boating, hydromodifications, and wetlands and riparian areas. The current implementation plan for polluted runoff control is available on the Clean Water Branch/Polluted Runoff Control Program website at www.state.hi.us/doh/eh/cwb/prc/. EPA has conditionally approved the joint Department of Health/Coastal Zone Management Program, with full approval pending, among other requirements, identification of statewide enforceable backup policies and rules for use in cases where voluntary compliance is not achieved.

**III. Proposed Amendments to §11-54-8. <u>Specific criteria for recreational areas.</u>**

The U.S. Environmental Protection Agency (EPA) is requiring the State Department of Health to amend §11-54-8, <u>Specific criteria for recreational areas,</u> in order to replace fecal coliforms with either enterococcus or <u>E. coli</u> as an indicator of fecal pollution in inland waters (waters of salinity ≤ 32.000 ppt). EPA's guidance document, titled "Implementation Guidance for Ambient Water Quality Criteria for Bacteria " (Draft, EPA-823-B-02-003, May, 2002), should be consulted for the reasons for this requirement; see especially section 4.3, "What is EPA's policy regarding high levels of indicator organisms originating from environmental sources in tropical climates?" The criteria document on which EPA's guidance is based is titled "Ambient Water Quality Criteria for Bacteria – 1986" (EPA440/5-84-002, January, 1986).

To minimize costs and provide data comparable to data currently collected in marine waters, Hawaii's amendment identifies enterococcus as the sole microbial indicator of the quality of recreational waters, but at two different concentrations – 33 CFU per 100 ml for inland waters (waters ≤ 32.000 ppt salinity) and 7 CFU per 100 ml for marine waters (waters >32,000 ppt salinity). Also, single sample maxima have been added to both the inland and marine standards. In order to establish uniform monitoring procedures, sampling periodicities have been defined identically for all surface water salinity ranges, as described in the proposed amendment.

The Department calculated the numeric single sample maxima (SSM) using the formula for single sample limits from page 15 of EPA's 1986 guidance document, cited above:

Formula:

SSM = antilog$_{10}$ [log$_{10}$(WQS) + ((curve factor) * log$_{10}$ standard deviation)].

For Inland Waters (salinity ≤ 32.000 ppt):

For inland waters, EPA is requiring the State to use an SSM = 89 CFU enterococcus/100 ml, which is the published value for inland waters in EPA's 1986 guidance document. The confidence level on this value was set at 82%, reflecting the variable degree of full-body contact recreation existing in inland waters, including wading in shallow streams, swimming in pools below waterfalls and in deeper stream reaches, fishing in fresh and brackish inland waters (and occasionally consuming the fish) and use of watercraft of a range of sizes for paddling.

For Marine Waters (salinity > 32.000 ppt):

For marine waters, the SSM = 100 CFU enterococcus/100 ml. The confidence level chosen for marine waters, 75%, reflects the increasing use of even remote beaches by both residents and tourists and the consistently high use of Hawaii's main beaches on a year-round basis

At a meeting in Honolulu organized by the University of Hawaii, Water Resources Research Center (March 1-2, 2001), 16-18 out of 18 invited experts on the use of indicators in subtropical and tropical waters agreed that: (1) soil, sediments, water and plants may be significant indigenous sources of indicator bacteria in tropical waters; (2) tropical environments change the relationship between indicators of fecal contamination and health effects observed in bathers; (3) fecal indicators can multiply and persist in soil, sediment and water in some tropical and subtropical environments; and (4) health effects associated with exposure to polluted runoff should be evaluated with the use of additional alternative indicators.

Because EPA's indicators of fecal contamination have been validated only for the association between exposure to human sewage and minor gastrointestinal illnesses, our implementation policy for this rule will restrict the use of Hawaii's recreational waters criteria for enterococcus to locations where the source has been identified by sanitary survey methods as highly likely to be human sewage. Because concentrations of animal wastes also pose a human health hazard, locations where animal wastes are accumulating will also be investigated for possible application of the rule.

At present, alternative indicators either lack a risk assessment or an epidemiology study, or methodologies have not been developed that are suitable for routine monitoring; these indicators are not ready for use in evaluations of health risks to bathers from exposure to polluted runoff.

Although many of Hawaii's inland waters routinely exceed the proposed enterococcus standard of 33 CFU per 100 ml, application of this criterion only in the vicinity of likely discharges of human sewage or animal wastes will focus attention on known health risks rather than on currently unknown effects of exposure to persistent environmental populations of this indicator. The recreational waters criteria will be updated as information becomes available on appropriate indicators of health risks, if any, associated with polluted runoff uncontaminated with human sewage.

Costs associated with changing the indicator bacteria type should be minimal because the state and most private labs already test for multiple indicators. The price difference between fecal coliform (or E. coli) and enterococci analyses at the state lab ranges from $5 to $2 per sample, declining as the number of samples processed at one time increases. The price difference for private labs is approximately $20 per sample for traditional analyses; however, EPA recently approved a new methodology called Enterolert (IDEXX Labs), which gives results comparable to those from current methods but is less expensive, simpler, and less time-consuming. With proper quality assurance and quality control procedures in place, even small community groups may be able to use this methodology to test their waters. Local, private laboratories are considering switching to this methodology for inland waters; however, further testing will be necessary to validate the accuracy of this methodology at low detection levels such as those for marine waters.

The federal Beach Act requires that the State switch to either E. coli or enterococci as an indicator; although the costs for enterococci analyses are slightly higher, the benefits of a more reliable indicator of pathogens in tropical waters outweigh the costs. The State is continuously searching for more stable and accurate indicators of pathogens in the water to ensure the safety of local residents and tourists, who utilize our waters.

**IV. Correction of Inadvertent Typographical Errors:**

A review of the edition of the rule dated April 4, 2000 found that several typographical errors had been inadvertently incorporated into the text. Typographical errors in §§11-54-4(b)(3), 11-54-5 and 11-54-6(3) (year 2000 edition) replaced text in the previous version of the rule, dated October 29, 1992, with a version not intended or subject to the public notice and hearing in 1999. Also, the U.S. EPA requires clarification or correction of certain new text in §§11-54-5 and 11-54-6(d)(1)(i) (year 2000). These errors and requests for revision were published in the November 8, 2000 edition of the Environmental Notice.

Also, references to regulations in 33 and 40 CFR have been updated in §11-54-3 and -9 , and two EPA technical references in §11-54-10 have been updated to reflect the latest editions.